

APPROVED FOR EXPEDITED PROCESSING PURSUANT TO 37 CFR §1.102

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	:	Confirmation Number:	4047
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Bruce S. HALL	:	Examiner:	Phi D A
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Appln. Number: 10/510,691	:	Group Art Unit:	3637
	:		
Filing Date: October 8, 2004	:		
	:		
For: Shrapnel Containment System	:		
and Method for Producing Same:	:		

McLean, Virginia
July 27, 2006

AMENDMENT AND RESPONSE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Amendment is filed in response to a first Office Action mailed on April 27, 2006. Please amend the application as indicated below.

Amendments to the Claims are reflected in the listing of claims, which begins on page 2 of this paper.

Remarks/Arguments begin on page 11 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method for improving blast resistance of a structure, comprising:

spraying a layer of an elastomeric material to form a blast resistant panel of a predetermined thickness in the range of about 100 mil to about 250 mil; and

once cured, securing said blast resistant panel to a surface of said structure so that the blast resistant panel extends from at least two opposing edges of the surface of said structure.

2. (original) A method as set forth in Claim 1, wherein said elastomeric material is selected from the group consisting of polyurea, polysiloxane; polyurethane, and a polyurea/polyurethane hybrid.

3. (previously presented) A method as set forth in Claim 1, wherein said elastomeric material is a polyurea material.

4. (previously presented) A method as set forth in Claim 2, wherein said elastomeric material has a percent elongation at break in a range of about 100-800%, and has a tensile strength greater than about 2000 psi.

5. (original) A method as set forth in Claim 4, wherein said elastomeric material has a percent elongation of break in a range of about 400-800%.

6. (previously presented) A method as set forth in Claim 1, wherein said panel is flexible.

7. (original) A method as set forth in Claim 6, wherein said elastomeric material is selected from the group consisting of polyurea, polysiloxane; polyurethane, and a polyurea/polyurethane hybrid.

8. (previously presented) A method as set forth in Claim 6, wherein said elastomeric material is a polyurea material.

9. (original) A method as set forth in Claim 7, wherein said elastomeric material has an percent elongation at break in a range of about 100-800%, and has a tensile strength greater than about 2000 psi.

10. (original) A method as set forth in Claim 9, wherein said elastomeric material has a percent elongation of break in a range of about 400-800%.

11. (previously presented) A method as set forth in Claim 6, wherein spraying said layer of said elastomeric material further comprises spraying said elastomeric material onto a fabric reinforcement layer.

12. (previously presented) A method as set forth in Claim 1, wherein spraying said layer of said elastomeric material comprises spraying said layer directly onto a molding surface.

13. (previously presented) A method as set forth in Claim 1, wherein spraying said layer of said elastomeric material comprises positioning a fabric reinforcement layer on a molding surface; and spraying said elastomeric material onto said fabric reinforcement layer on said molding surface.

14. (currently amended) A blast-resistant panel, comprising:
a cured layer of a sprayed elastomeric material having a predetermined thickness in the range of about 100 mil to about 250 mil, and
fastener elements for securing said cured layer to a surface of a structure so that the cured layer extends from at least two opposing edges of the surface of said structure.

15. (previously presented) A blast-resistant panel as set forth in Claim 14, wherein the elastomeric material is a material selected from the group consisting of polyurea; polysiloxane; polyurethane, and a polyurea/polyurethane hybrid.

16. (previously presented) A blast-resistant panel as set forth in Claim 14, wherein said elastomeric material is polyurea.

17. (original) A blast-resistant panel as set forth in Claim 14, further comprising a channel member secured to said panel around at least a portion of a periphery thereof.

18. (canceled)

19. (currently amended) A blast-resistant panel as set forth in Claim ~~[[18]]~~14, wherein the blast resistant panel has a thickness of about 180 mil.

20. (original) A blast-resistant panel as set forth in Claim 14, wherein said elastomeric material has a percent elongation at break in a range of about 100-800%.

21. (original) A blast-resistant panel as set forth in Claim 20, wherein said elastomeric material has a percent elongation at break in a range of about 400-800%.

22. (original) A blast-resistant panel as set forth in Claim 20, wherein said elastomeric material has a tensile strength greater than about 2000 psi.

23. (original) A blast-resistant panel as set forth in Claim 14, wherein said panel further comprises a fabric reinforcing layer.

24. (original) A blast-resistant panel as set forth in Claim 16, wherein said panel further comprises a fabric reinforcing layer.

25. (original) A blast-resistant panel as set forth in Claim 24, wherein said fabric reinforcing layer is constructed of aramid fibers.

26. (original) A blast-resistant panel as set forth in Claim 24, wherein said fabric reinforcing layer is constructed of polyester fibers.

27. (currently amended) A system for improving the blast resistance of a structure, comprising:

one or more flexible, blast-resistant panels having a predetermined thickness in a range between about 100 mil and 250 mil and constructed of an elastomeric material sprayed onto a fabric reinforcing layer,

said one or more flexible, blast-resistant panels having a steel channel fastened around a periphery thereof; and

a plurality of fasteners adapted to fasten said steel channel and said one or more flexible, blast-resistant panels to a wall of said structure so as to cover the wall of the structure with said one or more flexible, blast-resistant panels.

28. (previously presented) The system of claim 27 wherein said steel channel comprises:

a pair of opposing sides depending from opposite ends of a bottom portion to form a substantially “U” shaped channel.

29. (currently amended) The system of claim 27 wherein said steel channel comprises:

a “U” shaped steel channel along a top portion, a bottom portion, and a first side portion of the periphery; and

a “Z” shaped steel channel along a second side portion of the periphery opposite of the first side portion and between the top and bottom side portions, said “Z” shaped steel channel to be fastened to a first and a second of said one or more flexible, blast-resistant panels.

30. (currently amended) A system for improving penetration resistance of a structure, the system comprising:

a ~~[[cured]]~~ flexible, blast-resistant panel of a sprayed elastomeric material having a predetermined thickness;

a channel attached around a periphery of the ~~[[cured]]~~ flexible, blast-resistant panel; and

a plurality of fasteners to fasten said channel to a surface of a structure, the flexible, blast-resistant panel sized to extend across and cover an area between opposing sides of the surface of the structure.

31. (currently amended) The system of claim 30 wherein said ~~[[cured]]~~ flexible, blast-resistant panel comprises a fabric reinforcing layer.

32. (previously presented) The system of claim 31 wherein said fabric reinforcing layer is embedded in the elastomeric material.

33. (previously presented) The system of claim 31 wherein said fabric reinforcing layer is constructed of at least one of aramid, polyester, yarns, and fibers.

34. (previously presented) The system of claim 31 wherein said fabric reinforcing layer comprises an open grid pattern.

35. (previously presented) The system of claim 31 wherein said channel is fastened to an interior surface of said structure.

36. (currently amended) The system of claim 30 wherein said [[cured]] flexible, blast-resistant panel has a thickness in the range of about 100 mil to about 250 mil.

37. (currently amended) The system of claim 30 wherein said [[cured]] flexible, blast-resistant panel contains shrapnel between the elastomeric panel and the surface of the structure.

38. (currently amended) The system of claim 30 wherein said [[cured]] flexible, blast-resistant panel comprises an elastomeric material with a percent elongation at break in a range of about 100-800%.

39. (previously presented) The system of claim 38 wherein said elastomeric material has a percent elongation at break in a range of about 400-800%.

40. (previously presented) The system of claim 38 wherein said elastomeric material has a tensile strength greater than about 2000 psi.

41. (previously presented) The system of claim 38 wherein said elastomeric material is a material selected from the group consisting of polyurea; polysiloxane; polyurethane, and a polyurea/polyurethane hybrid.

42. (currently amended) A method of constructing a penetration resistant panel, the method comprising:

positioning a reinforcing fabric material against a molding surface;

spraying a first layer of an elastomeric material to a first thickness onto a first portion of the reinforcing fabric material;

flipping the reinforcing fabric material with the first layer of the elastomeric material over to expose a second portion of the reinforcing fabric; and

spraying a second layer of the elastomeric material to a second thickness onto the second portion of the reinforcing fabric material, the combined thickness of the first layer of the elastomeric material, the fabric material, and the second layer of the elastomeric material being in the range of about 100 mil to about 250 mil.

43. (currently amended) The method of claim 42 further comprising:

finishing around a periphery of the ~~[[blast]]~~penetration resistant panel to produce a final penetration resistant panel.

44. (currently amended) The method of claim 42 further comprising:

finishing around a periphery of the ~~[[blast]]~~penetration resistant panel to produce a final penetration resistant ~~panel~~panel; and

removing the penetration resistant panel from the molding surface.

45. (previously presented) The method of claim 42 wherein the flipping the reinforcing fabric material with the first layer of the elastomeric material comprises:

flipping the reinforcing fabric material with the first layer of the elastomeric material over on the molding surface to expose the second portion of the reinforcing fabric.

46. (previously presented) The method of claim 42 wherein the elastomeric material is a material selected from the group consisting of polyurea; polysiloxane; polyurethane, and a polyurea/polyurethane hybrid.

47. (previously presented) The method of claim 42 wherein the reinforcing fabric is substantially planar.

48. (previously presented) The method of claim 47 wherein the reinforcing fabric comprises a substantially open grid pattern.

49. (previously presented) The method of claim 42 wherein the penetration resistant panel is blast resistant.

50. (previously presented) The method of claim 42 further comprising allowing the penetration resistant panel to cure.

51. (previously presented) The method of claim 50 further comprising securing the cured penetration resistant panel to a surface of a structure.

52. (currently amended) A blast and penetration resistant system comprising:
a cured, blast-resistant panel of a sprayed elastomeric material having a fabric reinforced layer embedded therein, the cured, blast-resistant panel having a predetermined thickness between about 100 mil and about 250 mil, a percent elongation at break in a range of about 400-800% and a tensile strength of about 2000 psi or greater, the fabric reinforcing layer being substantially planar and including

warp and fill yarns defining an open grid pattern with openings of up to about 0.5 inches by 0.25 inches and a tensile strength of about 1200 psi by 1200 psi; and

a steel channel subsystem configured to be attached around a periphery of the cured panel and the steel channel subsystem and the periphery of the cured panel fastenable to a surface.

53. (currently amended) The blast and penetration resistant system of claim 52 further comprising:

fastener elements to pass through the steel channel subsystem and the periphery of the cured, blast-resistant panel and secure the steel channel subsystem and the periphery of the cured, blast-resistant panel to the surface.

54. (previously presented) The penetration resistant panel of claim 52 wherein the elastomeric material is a material selected from the group consisting of polyurea; polysiloxane; polyurethane, and a polyurea/polyurethane hybrid.

55. (previously presented) The penetration resistant panel of claim 52 wherein the steel channel subsystem comprises a “U”-shaped steel channel.